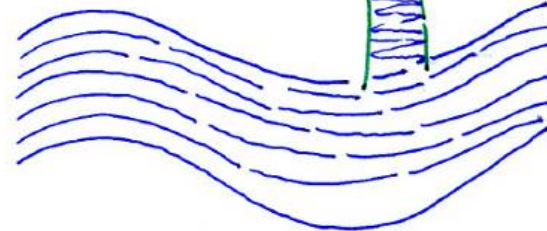
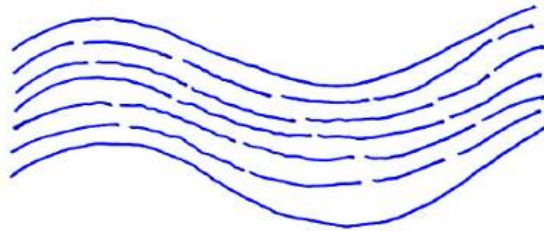
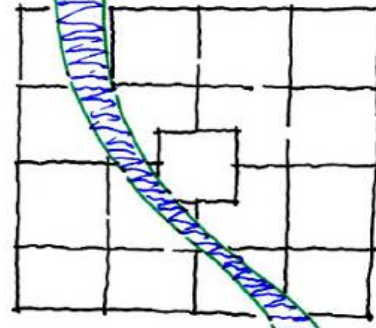
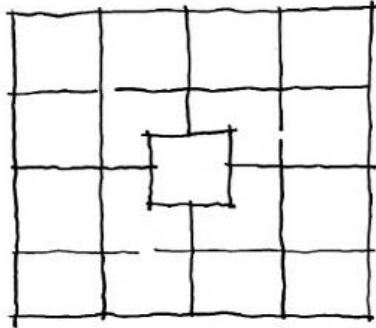
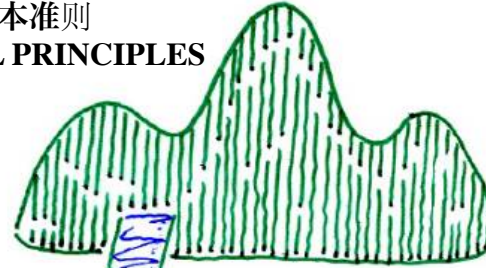
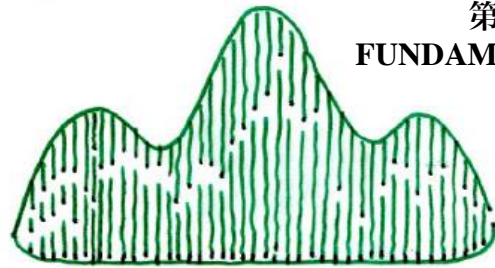


第一章基本准则
FUNDAMENTAL PRINCIPLES

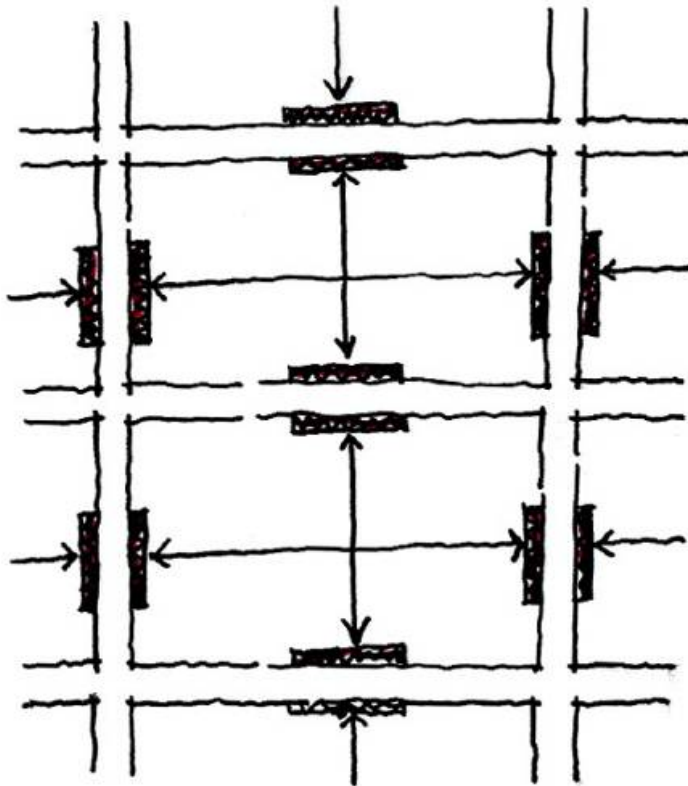


山城水
HILL CITY RIVER

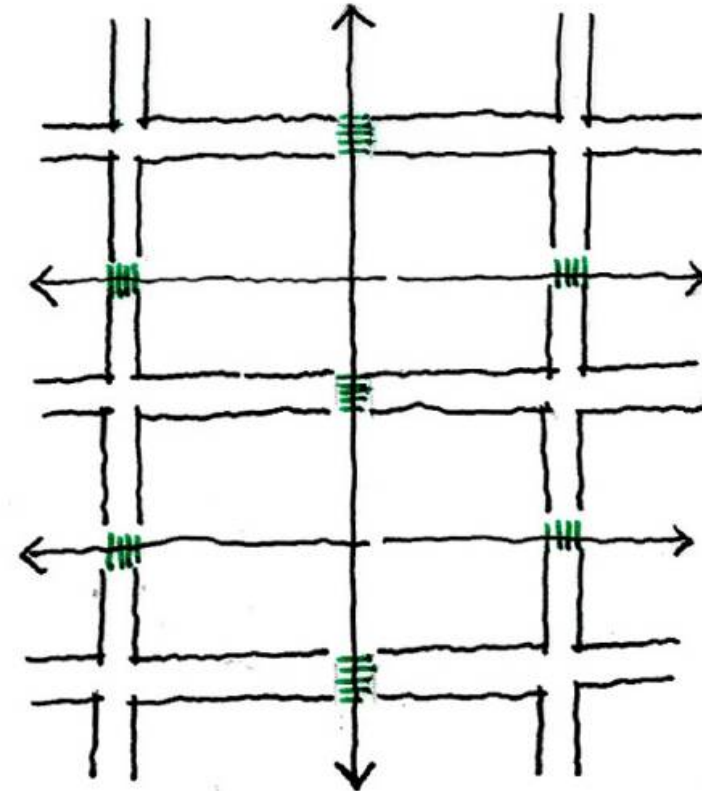
山-城-水
HILL-CITY-RIVER

准则1：自然的延续
PRINCIPLE 1: RECONNECT TO NATURE





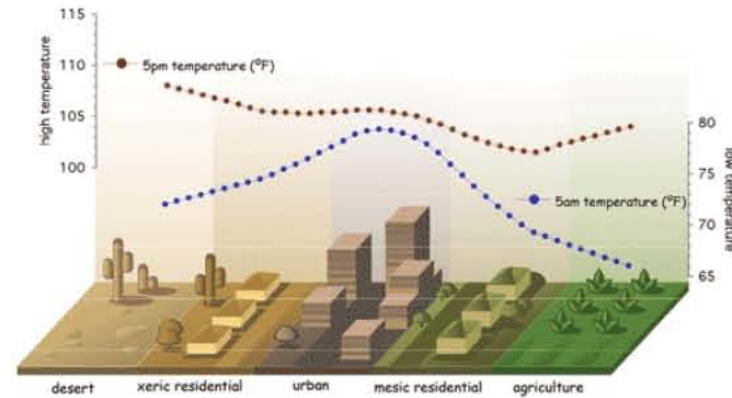
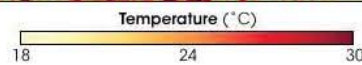
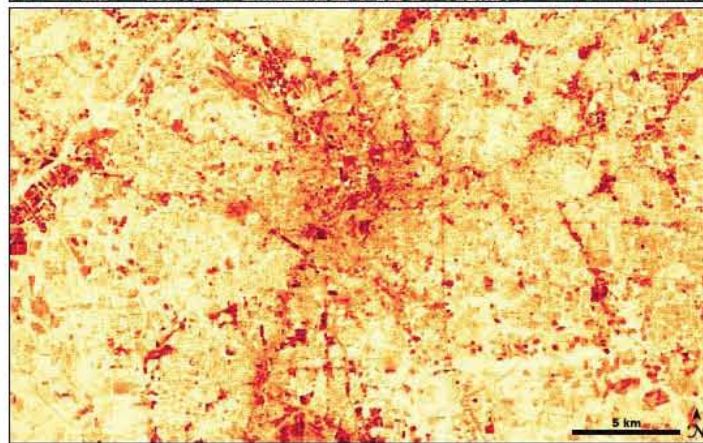
分割与障碍
BLOCKED IN BLOCKS



可达与延续
ACCESSIBILITY THROUGH BLOCKS

准则2: 宜居性-以人为本
PRINCIPLE 2: LIVABILITY - "PEOPLE OVER CARS"





准则3：增加绿地公共空间以减少热岛效应

PRINCIPLE 3: REDUCE HEAT ISLAND WITH TREES AND LANDSCAPE



Principle 5: **Envision the Result Collaboratively**: so different sectors can complement each other, plan and work together.





沿珠江航道设置水上4条巴士线
Provide 4 water taxi routes on Pearl River Fairway

水上交通和新客港 Water Transportation & New Passenger Port



E³Regenesis

Greening Guangzhou for the World Games: Jeffrey Heller's Presentation

regenerating energy, environment & economy

So much for planning and design. Now, can you prove it?

Can there be a truly Green Building or Eco-city without a Data-based approach?

Wei Qingpeng
Tsinghua University
Building Energy Research Center



China's Tsinghua University BERC

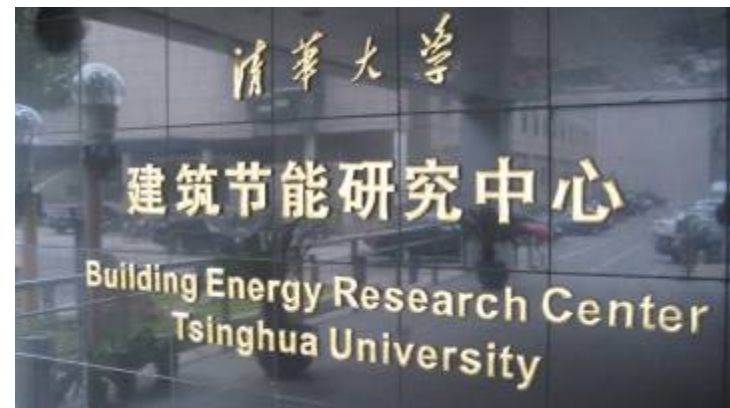
Building Energy Research Center (BERC)

*Established in March, 2005; Sprouted from
Tsinghua U. Institute of Built Environment*



Mission

*Devote to develop energy efficient
and environmentally responsible
buildings and cities in accordance
with national and international
energy and environmental targets
through innovation.*

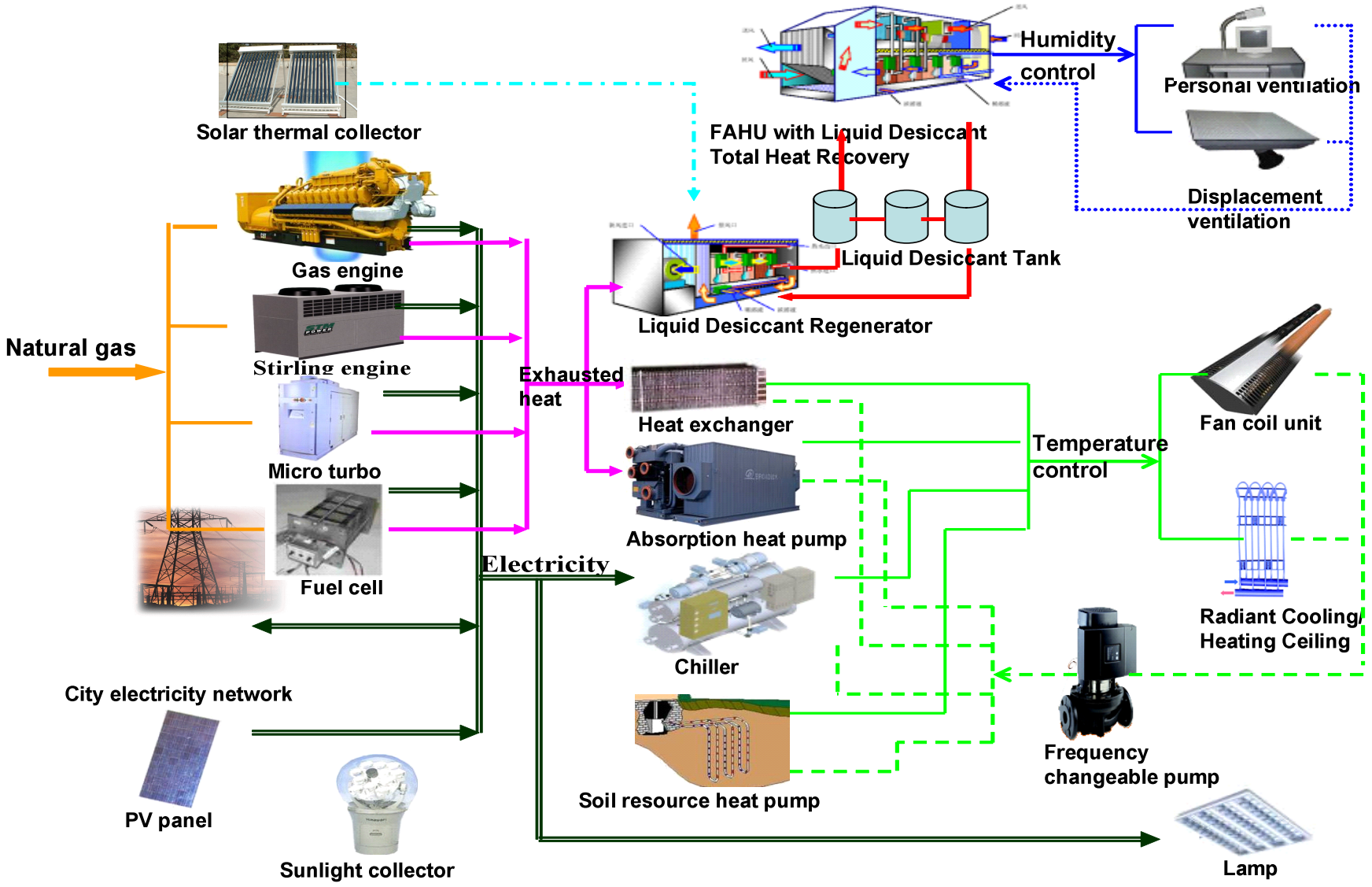


Low Energy Demo Building: An Integrated Platform

Tsinghua University Building Energy Efficiency Program, Beijing, China



Holistically Integrated Building System Components and Processes



Slides by Qingpeng Wei, UCGEC Suzhou Conference 2010
 regenerating energy, environment & economy

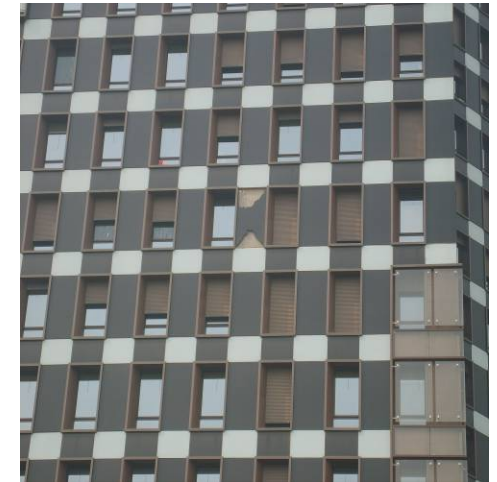
MEASUREMENT PROVED THAT Multi Family Buildings in Beijing Use Energy Differently



A. 5 floors, 1981 Split unit



C. 26 floors, 2003 Split unit



E. 26 floors, 2005,
Centralized AC system



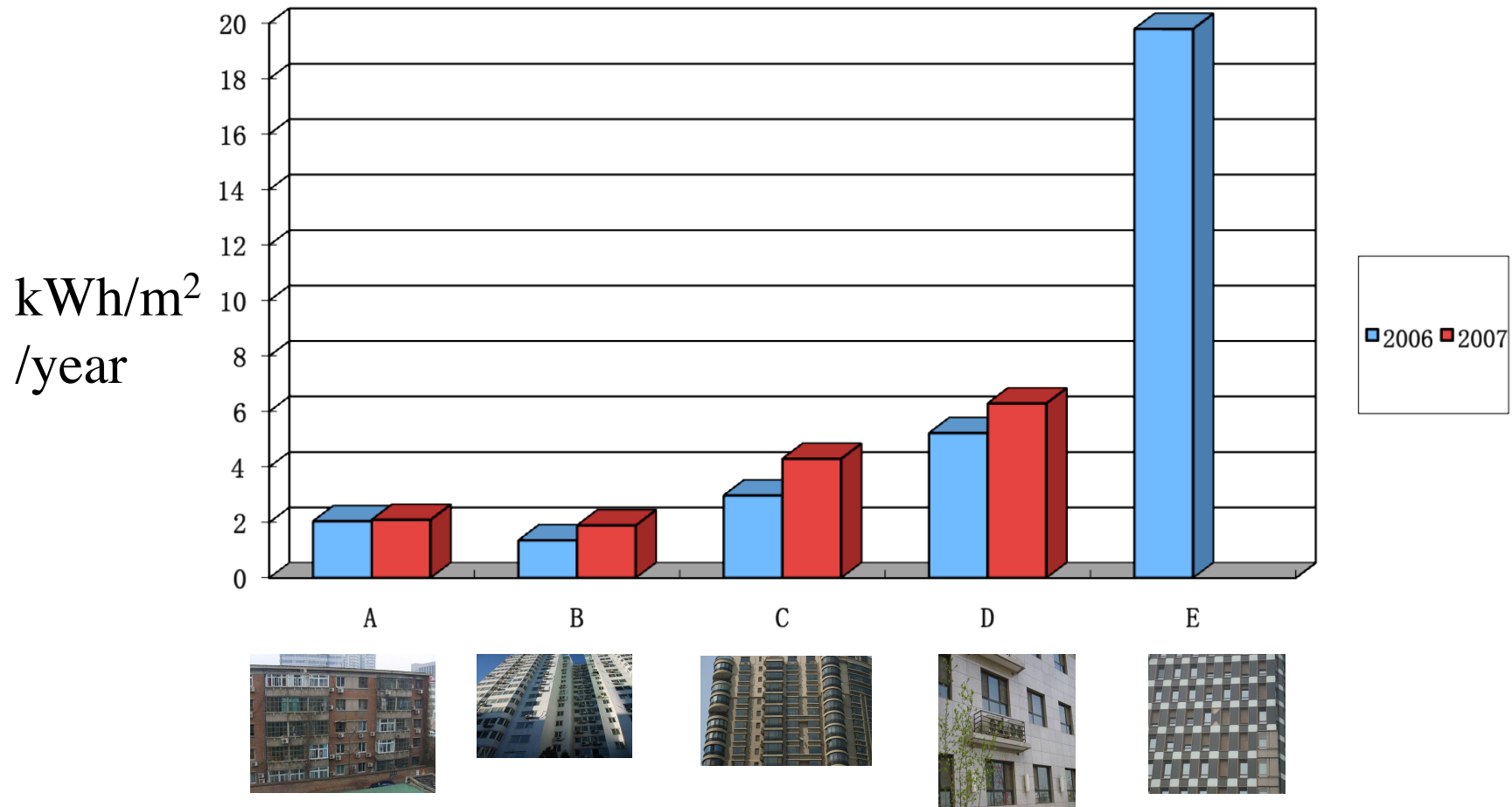
B. 18 floors, 1996, Split unit



D. 26 floors, 2004, Unitary
AC each residence



Measured Electricity Use for Air Conditioning in Five Beijing Apartment Buildings (the more centralized the more wasteful)



Measured Results of LEED Certified Buildings USGBC 2008

What went wrong? Or Right? How do we control quality?

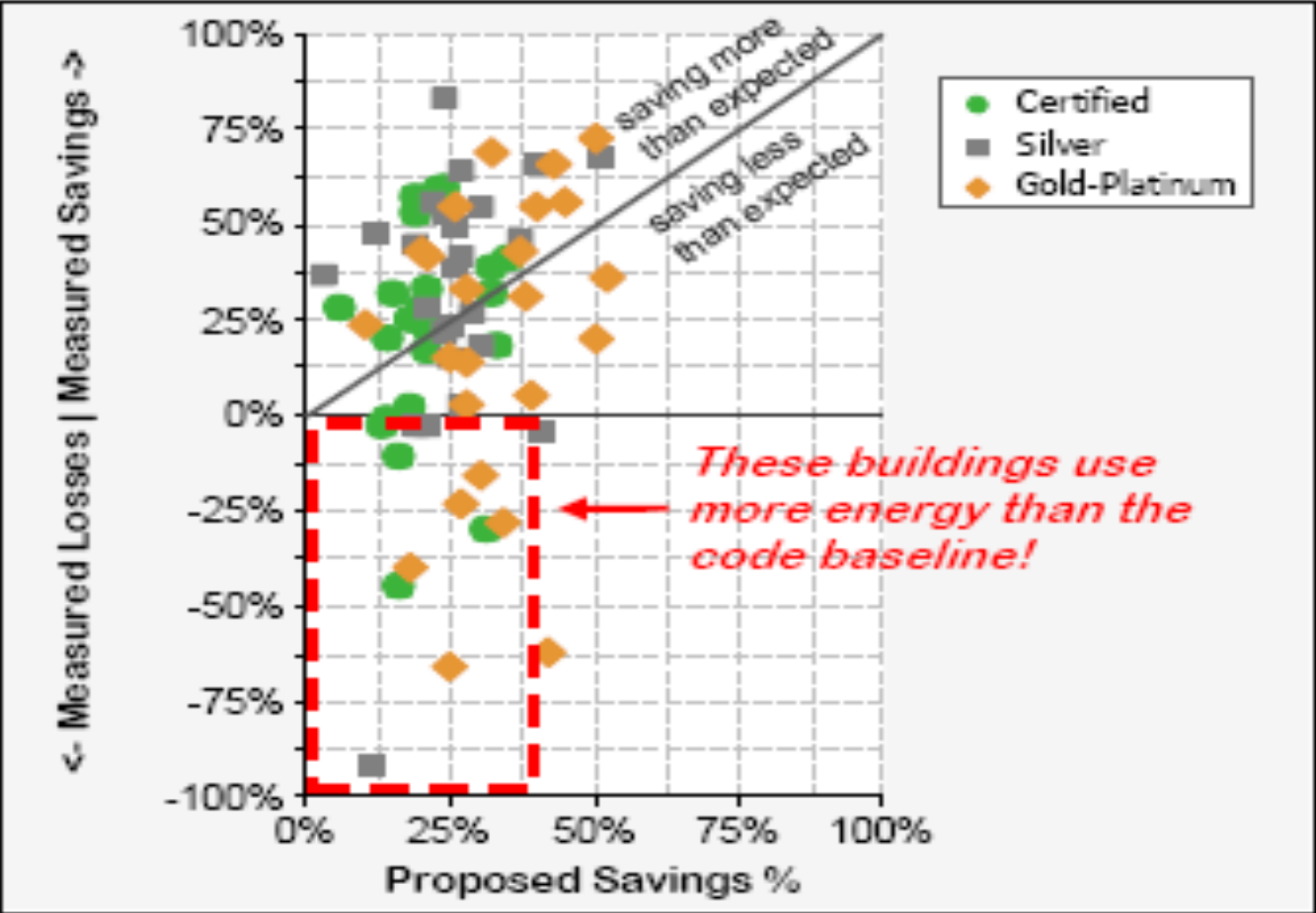
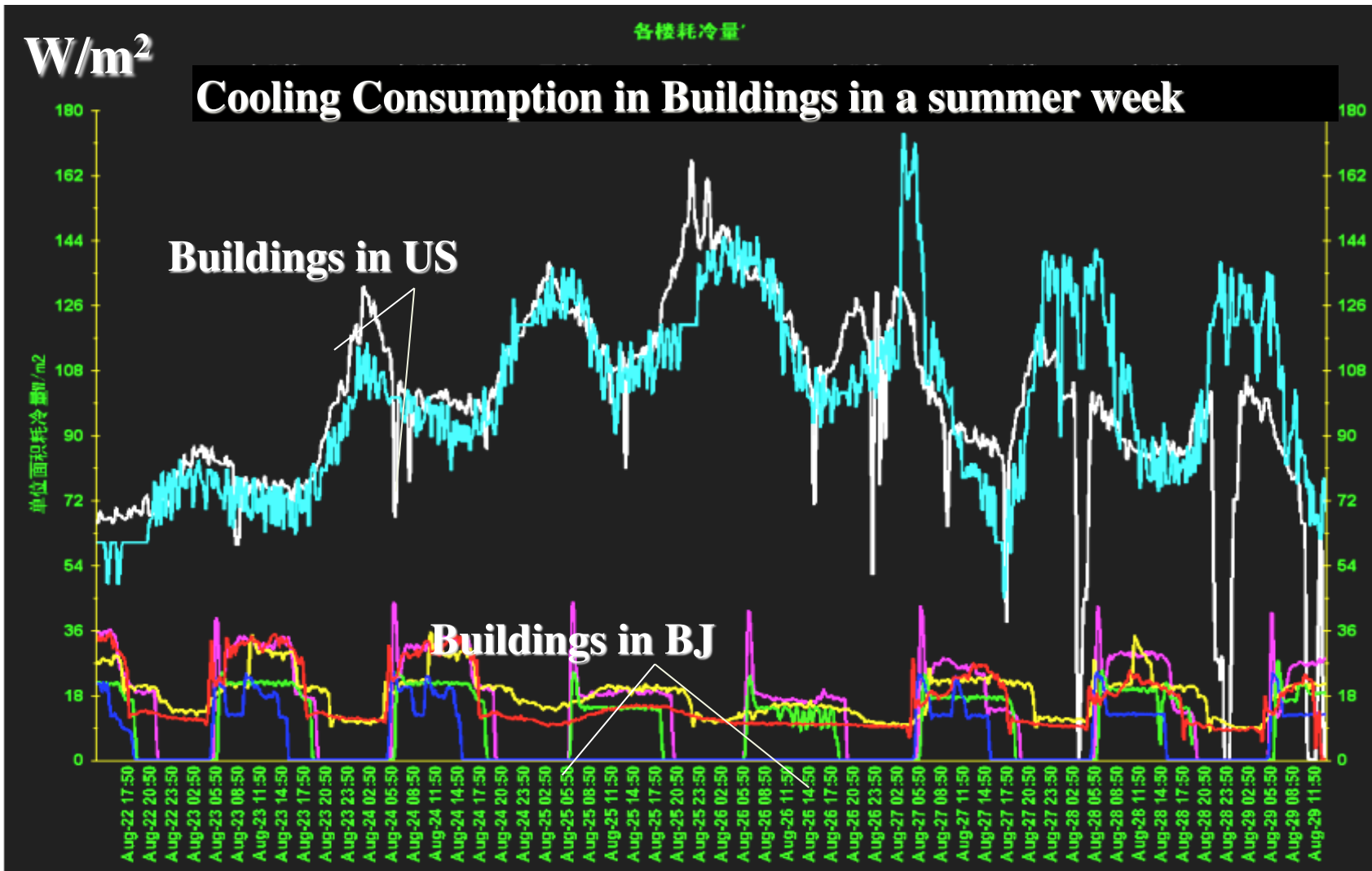


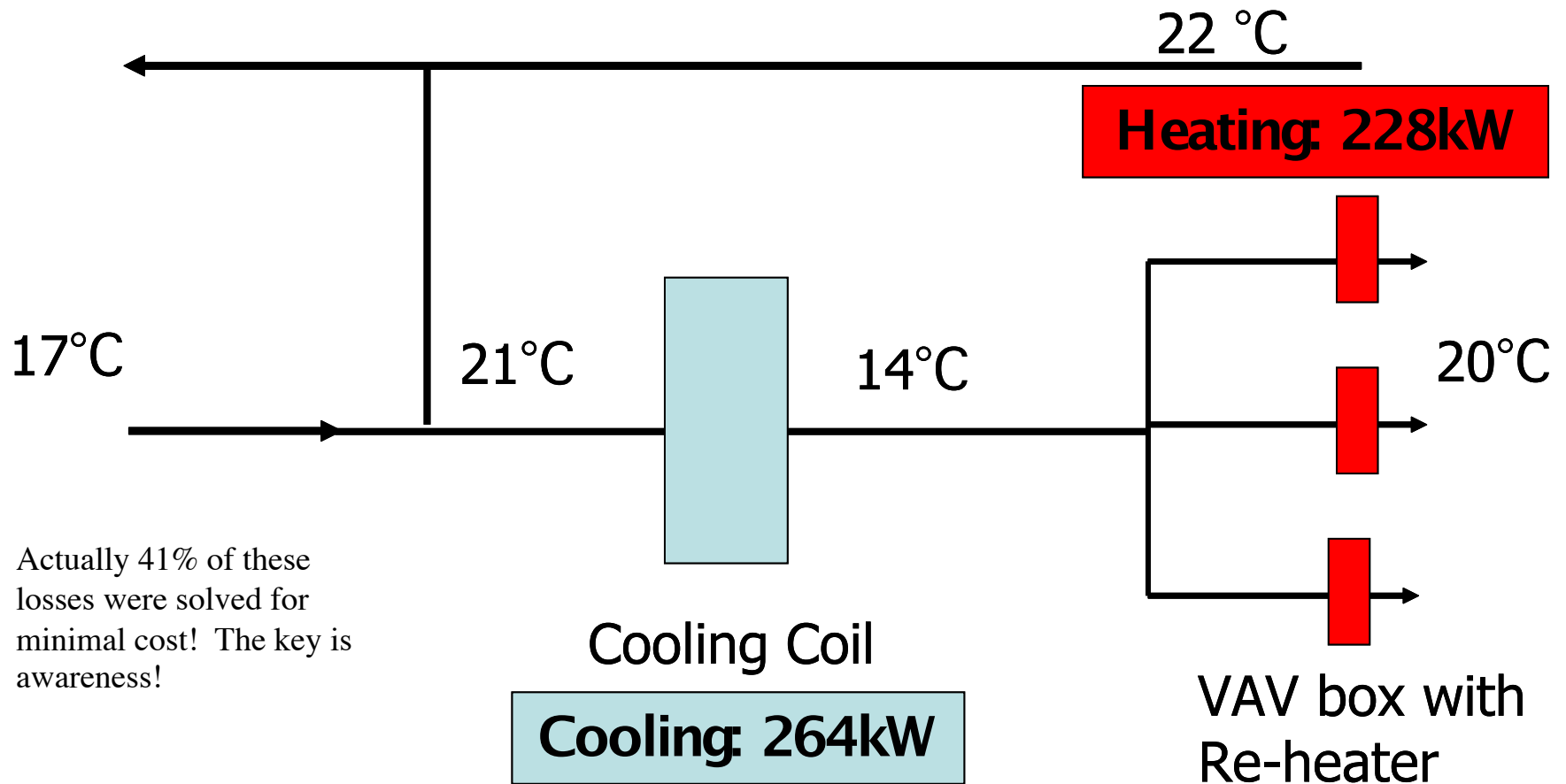
Figure ES- 5: Measured versus Proposed Savings Percentages

Metered Cooling Consumption US/Beijing



Why? e.g., Reheating Fights with Cooling

A typical Air Handling Process in a US bldg:
VAV (Variable Air Volume) + Reheat



Actually 41% of these losses were solved for minimal cost! The key is awareness!

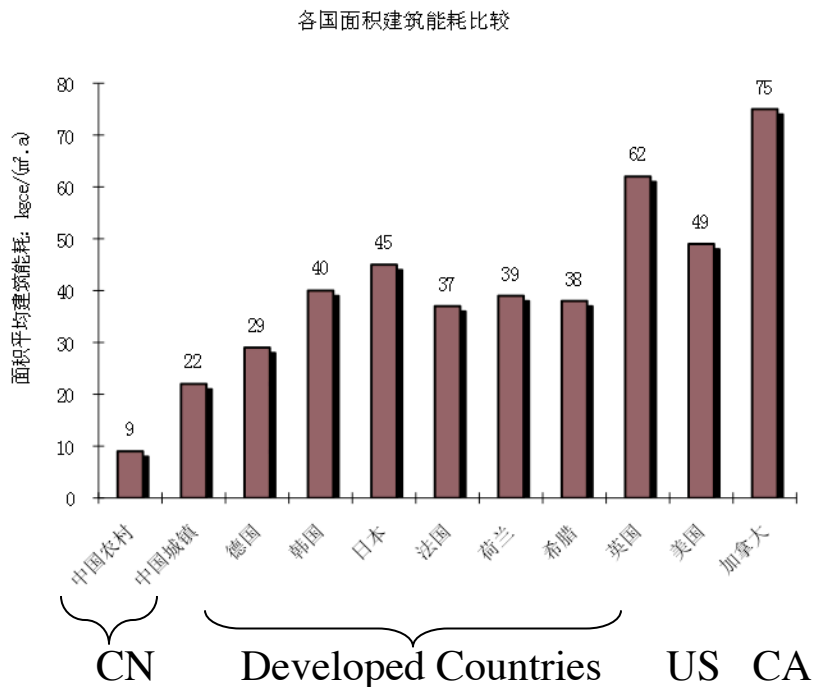


What about carbon (CO₂e) Emissions?

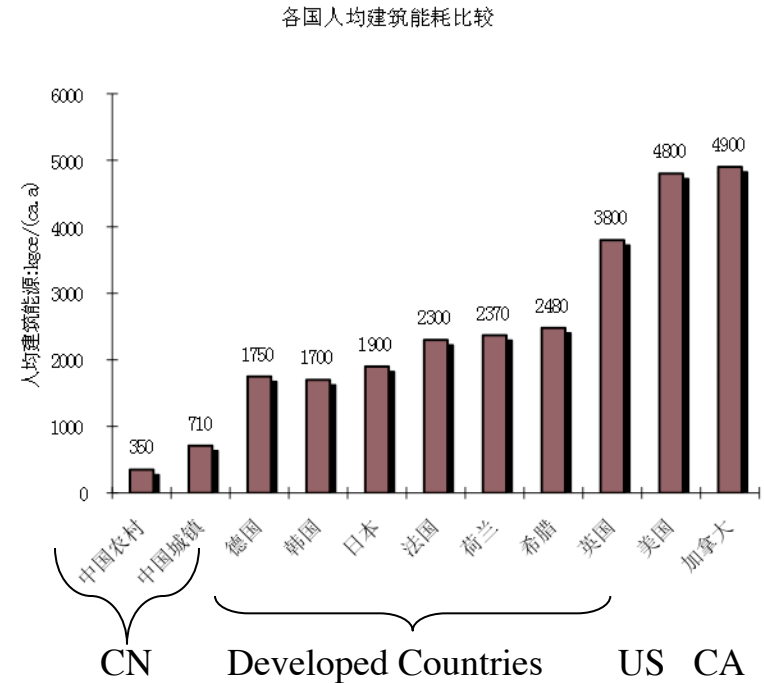
Are Chinese Building Carbon Emissions Low Enough?

Energy efficiency and carbon emissions are related but not proportional

Carbon Emissions Per Unit Area



Carbon Emission Per Capita



China produces less CO₂e during operations than developed countries on a per unit of building area and on a per capita basis but still needs to improve for the health of her people.

数据来源: 清华建筑节能研究中心



建筑碳排放也需要生命周期分析 (Building Carbon Emissions also need Lifecycle Analysis)

建材生产不底碳 (Building Materials production is not low carbon)

